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COMMON DISEASES OF BEANS X

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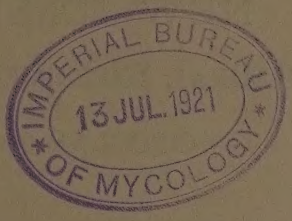

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CIRCULAR 50

Common Diseases of Beans*

The bean growing industry is very important, especially at points in the southern part of the State which are accessible to the Philadelphia markets. The loss due to fungus diseases is very heavy and is the cause of many inquiries to the Agricultural Experiment Station. Therefore, it is deemed advisable to prepare this circular on the common diseases of beans and their treatments.

ANTHRACNOSE (*Colletotrichum lindemuthianum*) is the most common, the most destructive and the cause of the most inquiries. This is a fungus disease which is always prevalent on certain varieties of the wax, string or bush beans. It varies in severity with the character of the seed and with the weather. If the seed carries a large percentage of diseased beans, the attack will become severe earlier in the season than if the seed is comparatively clean. The disease is always more severe during a wet than during a dry season.

The disease attacks pods, leaves and stems. The pod form is the cause of the most inquiries and many growers fail to recognize the fact that the disease as it appears on the leaves and stems is the same as that on the pods. It starts on the pods as small dark spots which increase in size, sometimes coalescing, thus forming

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*Prepared by Mel. T. Cook, Ph. D., Plant Pathologist of the New Jersey Agricultural Experiment Station, December 1, 1915.

large, irregular canker-like spots which are pinkish, reddish or orange in color but become black with reddish borders. On the leaves it appears as black spots along the petiole and veins, usually on the lower surface. The older spots are somewhat sunken and more nearly like those on the pods. On the stems it appears as spots very similar to those on the leaves but usually elongated up and down the axis.

The disease is carried on the seed and can be detected by the dark brown or reddish spots. Therefore, it is evident that the use of clean seed is of great advantage in controlling this disease. It is claimed that seed grown in the dry, irrigated districts of the West carry less of this disease than seed grown in other places. The writer is inclined to believe this is correct. However, it is not always possible to secure this grade of seed and the writer knows from personal observation that much of the seed put on the New Jersey market contains a high percentage of diseased beans.

If the grower cannot secure satisfactory seed, free from spots, he will find it advantageous to hand-pick carefully the seed, throwing out all beans that show suspicious spots, and also all wrinkled and cracked beans. This practice will give a better stand and a better crop.

Do not cultivate, hoe, or pick the beans when wet. The spores by which the fungus is spread are sticky when wet. They cling to the farm implements and to the hands and garments of the worker and are thus carried from place to place.

The disease spreads from pod to pod after the beans are picked. Therefore, it is advisable to handle the newly picked beans as little as possible and to market them as soon as possible.

Rhizoctonia Root Rot is a fungus disease which is sometimes severe. It was the cause of many complaints in 1915. It is very frequently associated with anthracnose.

Lima Bean Pod Blight (*Phoma subcircinata*) is a very common fungus disease which is the cause of heavy losses in the southern part of the State, and the cause of many inquiries. It appears on the pods as brown or black spots of various sizes. Mild forms of this disease reduce the market value and severe cases prevent the maturity of many pods.

Lima Bean Leaf Spot (*Phylloslicta sp.*) is due to a fungus very similar to, or possibly the same as that causing the pod blight. It appears as brownish or black spots of irregular size.

These last two diseases are more or less prevalent every year, but sometimes become very severe. They are most severe immediately following wind storms, especially after the vines begin to bear. They are more severe on pole than on bush limas.

Dr. B. D. Halstead, a Botanist of the New Jersey Agricultural Experiment Station, reported in 1901 that the former could be controlled by spraying with Bordeaux mixture. The nature of these diseases is such that we would naturally expect them to be controlled by this treatment.

Downy Mildew Of Lima Beans (*Phytophthora phaseoli*) has been found a number of times on specimens sent to this Station. It appears on the pods, buds, very young leaves and young shoots as a dense white down. It is especially severe in wet weather and causes heavy losses.

On small plantings it can be controlled by frequent sprayings with Bordeaux mixture.

The Rust (*Uromyces appendiculatus*) is occasionally reported on Lima beans. It appears on the leaves, especially the under surface and also on the stems as small brown circular spots which become black late in the season. This disease has thus far been of very little importance in New Jersey.

It can be controlled by spraying with Bordeaux mixture.

The Blight (*Bacterium phaseoli*) attacks both field and garden varieties and also the lima bean. On the leaves it appears as irregular, water-soaked spots with distinct yellow or red borders. These spots increase in size but finally become dry and brittle. On the pods it appears as slightly raised water-soaked pustules which become irregular in size and shape and amber colored and finally dry and shrivelled. On the stems it causes spots somewhat resembling the spots caused by the anthracnose on the stems.

There is no satisfactory control, except the use of seed from healthy plants.

Other minor diseases of the bean are the bean leaf spot (*Isariopsis griseola*), the bean leaf blotch (*Cercospora cruenta*) and the powdery mildew (*Erysiphe polygoni*).

Note—For methods of making and using Bordeaux mixture see circular No. 48, New Jersey Agricultural Experiment Station.